

REMARKS

The Office Action mailed September 22, 2005, has been received and reviewed. Claims 1, and 3 through 27 are currently pending in the application. Claims 1, 3 through 18, and 20 through 27 stand rejected. Claim 19 has been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation. Applicant has amended claims 1, 11, and 22 through 25, and presents new claim 28. Applicant respectfully requests reconsideration of the application as amended herein.

35 U.S.C. § 102(e) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,773,938 to Wood et al.

Claims 1, 3 through 6, 11 through 16, and 22 through 24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Wood et al. (U.S. Patent No. 6,773,938). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicant asserts that independent claim 1 is not anticipated by Wood et al. because Wood et al. does not expressly or inherently describe “ablating one or more depressions in a surface of the semiconductor substrate to define the at least one electrical pathway, **the depressions extending along the surface.**” as recited in independent claim 1 as currently amended.

Wood et al. describes a microelectronic component test system 10 that includes a probe card 20. Wood et al., column 3, lines 10-14. Wood et al. further describes a method of manufacturing such a probe card with reference to FIGS. 4-16. Wood et al., column 3, lines 49-50. With reference to FIG. 5, Wood et al. teach the formation of “blind vias or holes...in [a] substrate.” Wood et al., column 3, lines 63. “[T]hese holes extend inwardly from the front face 202 of the substrate to a depth A from the front face 202.” Wood et al., column 3, lines 64-66.

Wood et al. teaches that the holes 210 can be “laser machined, e.g., via laser ablation.” Wood et al., column 4, lines 19-20.

Wood et al. merely describes ablating a hole in a surface of the substrate, the hole extending **transverse** to the surface of the substrate. Applicant respectfully asserts that Wood et al. does not expressly or inherently describe ablating a depression in a surface of a semiconductor substrate that **extends along the surface**.

As Wood et al. does not expressly or inherently describe each and every element recited in independent claim 1, Applicant asserts that claim 1 is not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(e).

Applicant additionally asserts that each of dependent claims 3 through 6 is allowable at least because each depends directly or indirectly from claim 1, which is allowable. Therefore, Applicant asserts that claims 2 through 6 are not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of dependent claims 3 through 6 under 35 U.S.C. § 102(e).

Regarding dependent claim 3, Applicant additionally asserts that Wood et al. does not expressly or inherently describe “etching the one or more depressions in the surface of the semiconductor substrate **subsequent to ablating and prior to depositing** the electrically conductive material over the surface of the semiconductor substrate,” as recited in claim 3. In contrast, Wood et al. describes ablating holes 210 as previously described, optionally depositing an intermediate layer 215 that substantially covers the internal surface of each of the holes 210 (Wood et al., column 4, lines 41-42), depositing a conductive metal 220 that substantially fills the holes 210 (Wood et al., column 5, lines 15-19), and removing excess conductive metal (overburden O) deposited outside the holes 210 (Wood et al., column 5, lines 19-24). The excess conductive metal can be removed by “elective etching.” Wood et al., column 6, lines 9-16. Wood et al. does not expressly or inherently describe etching the holes 210 **subsequent to ablating and prior to depositing** either the intermediate layer 215 or the conductive metal 220. Applicant respectfully asserts that dependent claim 3 is not anticipated by Wood et al. for this additional reason, and requests that the Examiner withdraw the rejection of dependent claim 3 under 35 U.S.C. § 102(e).

Applicant asserts that independent claim 11 is not anticipated by Wood et al. because Wood et al. does not expressly or inherently describe “substantially simultaneously ablating at least one depression in a surface of the semiconductor substrate to define the at least one conductive element in the form of an elongated trace, the at least one depression extending **along the surface of the semiconductor substrate**,” as recited in independent claim 11 as currently amended.

As previously discussed in relation to claim 1, Wood et al. merely describes ablating a hole that extends **transverse** to a surface of a substrate, but does not expressly or inherently describe ablating a depression in a surface of a semiconductor substrate that **extends along the surface**.

As Wood et al. does not expressly or inherently describe each and every element recited in independent claim 11, Applicant asserts that claim 11 is not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of independent claim 11 under 35 U.S.C. § 102(e).

Applicant additionally asserts that each of dependent claims 12 through 16 is allowable at least because each depends directly or indirectly from claim 11, which is allowable. Therefore, Applicant asserts that claims 12 through 16 are not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of dependent claims 12 through 16 under 35 U.S.C. § 102(e).

Regarding dependent claim 13, Applicant additionally asserts that Wood et al. does not expressly or inherently describe “etching the at least one depression and the at least another depression in the surface of the semiconductor substrate **subsequent to ablating and prior to depositing** the electrically conductive material...,” as recited in claim 13, for substantially the same reasons previously discussed in relation to dependent claim 3. Applicant respectfully asserts that dependent claim 13 is not anticipated by Wood et al. for these additional reasons, and requests that the Examiner withdraw the rejection of dependent claim 13 under 35 U.S.C. § 102(e).

Applicant asserts that independent claim 22 is not anticipated by Wood et al. because

Wood et al. does not expressly or inherently describe “ablating one or more depressions **in a surface of [a] sidewall of [a] semiconductor substrate**,” as recited in independent claim 22 as currently amended.

Applicant respectfully asserts that those of ordinary skill in the art know that semiconductor substrates are substantially planar and include two major surfaces, i.e., an active surface and a backside surface, with sidewalls that extend between the two major surfaces, typically in a direction that is normal to the major surfaces. As previously discussed in relation to claim 1, Wood et al. describes ablating a hole that extends transverse to a surface 202 of a substrate 200. Wood et al., column 3, lines 63-66. Furthermore, Wood et al. teaches that the substrate may comprise an “undoped silicon wafer.” Wood et al., column 3, lines 58-60. As clearly shown in FIGS. 4 through 16, the holes 210 are formed, however, in one of the major surfaces (the “front face 202” and the “back face 204”) of the substrate 200. Wood et al., column 3, lines 51-53. Wood et al. clearly does not expressly or inherently describe forming the holes 210 **in sidewalls** of the substrate 200, which are only shown in FIG. 1 and not in any of FIGS. 4 through 16.

As Wood et al. does not expressly or inherently describe each and every element recited in independent claim 22, Applicant asserts that claim 22 is not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of independent claim 22 under 35 U.S.C. § 102(e).

Applicant additionally asserts that each of dependent claims 23 and 24 is allowable at least because each depends directly or indirectly from claim 22, which is allowable. Therefore, Applicant asserts that claims 23 and 24 are not anticipated by Wood et al. and respectfully requests that the Examiner withdraw the rejection of dependent claims 23 and 24 under 35 U.S.C. § 102(e).

Regarding dependent claim 23, Applicant additionally asserts that Wood et al. does not expressly or inherently describe “depositing an electrically conductive material **over the surface of the sidewall** of the semiconductor substrate...,” as recited in claim 23. Wood et al. describes depositing conductive metal over a front face 202 of a substrate 200, which clearly is not a sidewall as previously discussed in relation to claim 22. Applicant respectfully asserts that dependent claim 23 is not anticipated by Wood et al. for this additional reason, and requests that

the Examiner withdraw the rejection of dependent claim 23 under 35 U.S.C. § 102(e).

Regarding dependent claim 24, Applicant additionally asserts that Wood et al. does not expressly or inherently describe “etching the one or more depressions in the surface of the **sidewall** of the semiconductor substrate **subsequent to ablating and prior to depositing** the electrically conductive material...,” as recited in claim 24. As previously discussed in relation to dependent claim 3, Wood et al. does not expressly or inherently describe etching a depression subsequent to ablating and prior to depositing a conductive material in the depression. As previously discussed in relation to claim 22, Wood et al. does not expressly or inherently describe depressions in the surface of a sidewall of a semiconductor substrate. Applicant respectfully asserts that dependent claim 24 is not anticipated by Wood et al. for these additional reasons, and requests that the Examiner withdraw the rejection of dependent claim 24 under 35 U.S.C. § 102(e).

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,773,938 to Wood et al. as applied to claims 1, 3-6, 11-16 and 22-24 above, and further in view of U.S. Patent No. 6,429,037 to Wenham et al.

Claims 8 through 10, 18, 20, 21, and 25 through 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wood et al. (U.S. Patent No. 6,773,938) as applied to claims 1, 3-6, 11-16 and 22-24 above, and further in view of Wenham et al. (U.S. Patent No. 6,429,037). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Applicant asserts that Wood et al. qualifies as prior art only under one or more of subsections (e), (f), and (g) of 35 U.S.C. §102, and that the subject matter described in Wood et al. and the inventions of claims 8 through 10, 18, 20, 21, and 25 through 27 were, at the time the inventions were made, “owned by the same person or subject to an obligation of assignment to the same person,” as recited in 35 U.S.C. §103(c). As a result, Applicant respectfully asserts that under 35 U.S.C. §103(c), the subject matter of Wood et al. cannot preclude patentability of the inventions of claims 8 through 10, 18, 20, 21, and 25 through 27.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejections to claims 8 through 10, 18, 20, 21, and 25 through 27 under 35 U.S.C. § 103(a) based on Wood et al. in combination with Wenham et al.

Obviousness Rejection Based on U.S. Patent No. 6,773,938 to Wood et al. as applied to claims 1, 3-6, 11-16 and 22-24 above, and further in view of U.S. Publication No. 2005/0064707 to Sinha

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wood et al. (U.S. Patent No. 6,773,938) as applied to claims 1, 3-6, 11-16 and 22-24 above, and further in view of Sinha (U.S. Publication No. 2005/0064707). Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant asserts that Wood et al. and Sinha each qualify as prior art only under one or more of subsections (e), (f), and (g) of 35 U.S.C. §102, and that the subject matter described in Wood et al., the subject matter described in Sinha, and the invention of claim 5 were, at the time the invention was made, “owned by the same person or subject to an obligation of assignment to the same person,” as recited in 35 U.S.C. §103(c). As a result, Applicant respectfully asserts that under 35 U.S.C. §103(c), the subject matter of Wood et al. and the subject matter of Sinha cannot preclude patentability of the invention of claim 5.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection to claim 5 under 35 U.S.C. § 103(a) based on Wood et al. in combination with Sinha.

Obviousness Rejection Based on U.S. Patent No. 6,773,938 to Wood et al. and U.S. Patent No. 6,429,037 to Wenham et al. as applied to claims 8, 9, 10, 18, 20, 21, 25, 26 and 27 above, and further in view of U.S. Publication No. 2005/0064707 to Sinha

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wood et al. (U.S. Patent No. 6,773,938) and Wenham et al. (U.S. Patent No. 6,429,037) as applied to claims 8, 9, 10, 18, 20, 21, 25, 26 and 27 above, and further in view of Sinha (U.S. Publication No. 2005/0064707). Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant asserts that Wood et al. and Sinha each qualify as prior art only under one or more of subsections (e), (f), and (g) of 35 U.S.C. §102, and that the subject matter described in Wood et al., the subject matter described in Sinha, and the invention of claim 17 were, at the time the invention was made, “owned by the same person or subject to an obligation of assignment to the same person,” as recited in 35 U.S.C. §103(c). As a result, Applicant respectfully asserts that under 35 U.S.C. §103(c), the subject matter of Wood et al. and the subject matter of Sinha cannot preclude patentability of the invention of claim 17.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection to claim 17 under 35 U.S.C. § 103(a) based on Wood et al. in combination with Wenham et al., and further in combination with Sinha.

Objections to Claim 19/Allowable Subject Matter

Claim 19 stands objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicant has amended claim 11, from which claim 19 indirectly depends, and respectfully assert that claim 19, as presented herein, is not dependent upon an unpatentable claim.

ENTRY OF AMENDMENTS

The amendments to claims 1, 11, and 23 through 25 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1, and 3 through 28 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,


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